

10/519821

Rec'd PCT/PTO 28 SEP 2005

1

SEQUENCE LISTING

<110> Daniell, Henry

<120> Plastid Genetic Engineering Via Somatic Embryogenesis

<130> CHL-T107C2Z2

<140> US 10/519,821

<141> 2004-12-30

<150> PCT/US2003/021157

<151> 2003-07-03

<160> 3

<170> PatentIn version 3.2

<210> 1

<211> 2800

<212> DNA

<213> Artificial Sequence

<220>

<223> aadA/BADH expression cassette

<400> 1

agcttgccggg cccccctcg aggtcgacgg tatcgatgag cctgattatc cctaagccca	60
atgtgagttt ttctagttag atttgctccc ccgcgctcgt tcaatgagaa tggataagag	120
gctcgtggga ttgacgtgag ggggcaggga tggctatatt tctgggagcg aactccgggc	180
gaatatgaag cgcacgtgata caagttatgc cttggaatga aagacaattc cgaatccgct	240
ttgtctaccc gatacaagtg agttgtaggg aggcacccat ggcagaagcg gtgacgcgcg	300
aagtatcgac tcaactatca gaggtagttg gcgtcatcga gcgccatctc gaaccagcgt	360
tgctggccgt acattttgtac ggctccgcag tggatggcgg cctgaagcca cacagtgata	420
ttgatttgct ggttacggtg acggtgacgg taaggcttga tgaacaacg cgccgagctt	480
tgatcaacga ccttttgaa acttcggctt cccctggaga gagcgagatt ctccgcgctg	540
tagaagtcac cattgttgtg cagcagcaca tcattccgtg gcgttatcca gctaagcgcg	600
aactgcaatt tggagaatgg cagcgcaatg acattcttgc aggtatcttc gagccagcca	660
cgatcgacat tgatctggct atcttgctgg caaaagcaag agaacatagc gttgccttgg	720
taggtccagc ggcggaggaa ctctttgatc cggttctga acaggatcta tttgagcgc	780
taaatgaaac cttaacgcta tggaaactgc cgcccgaagt ggctggcgat gagcgaaatg	840
tagtgcttac gttgttccgc atttggtaca gcgcagtaac cggcagaatc gcgccgaagg	900

atgctgctgc cgactgggca atggagcgcc tgccggccca gtatcagccc gtcatacttg 960
 aagctagaca ggcttatctt ggacaagaag aagatcgctt ggctcgcgc gcagatcagt 1020
 tggaagaatt tgttctactac gtgaaggcgc agatcaccaa ggtagtcggc aaataaaaaag 1080
 ccgaatctag agcgatcctg gctagtcta taggaggttt tgaaaagaaa ggagcaataa 1140
 tcatcttctt gttctatcaa gagggtgcta ttgctccttt cttttttct ttttatttat 1200
 ttactagtat ttacttaca tagacttttt tgtttacatt atagaaaaaag aaggagaggt 1260
 tattttcttg catttattca tgattgagta ttctattttg attttgatt tgtttgggct 1320
 gcgcggggag accacaacgg ttccctctca gaaataattt tgtttaactt taagaaggag 1380
 atataccatg gcgttcccaa ttctgctcgc tcagctattc atcgacggag agtgagagaga 1440
 acccattaaa aaaaatcgca taccogtcat caatccgtcc actgaagaaa toatcgggtga 1500
 tattccggca gccacggctg aagatgtgga ggttgcggtg gtggcagctc gaagagcctt 1560
 taggaggaaac aattggtcag caacatctgg ggctcatcgt gccacatact tgcgtgctat 1620
 tgctgctaag ataacagaaa aaaaagatca ttctgttaaa ctggaacca ttgattctgg 1680
 gaaacctttt gatgaagcag tgctggacat tgatgacgtt gcttcatggt ttgaatattt 1740
 tgccggacaa gcagaagctc ttgatggtaa acaaaaggct ccagtcaccc tgcctatgga 1800
 aagggtcaaa agtcatgttc tcaggcagcc ccttggtggt gttgattaa tatcccatg 1860
 gaattaccca cttctaattg ctacatggaa aattgctcca gcacttgctg ctgggtgtac 1920
 agctgtactt aagccatccg agttggcatc tgtgacttgt ctagaattcg gtgaagtttg 1980
 caacgaagtg ggacttcctc caggcgtggt gaatatcttg acaggattag gtccagatgc 2040
 tgggtcacca ttagtatcac accccgatgt tgacaagatt gcctttactg ggagtagtgc 2100
 cactggaagc aaggttatgg cttctgtgc ccaattggtt aagcctgtta cattagaact 2160
 tgggggtaaa agtctattg tagtgttga agatgttgat attgataaag ttgtggaatg 2220
 gactattttt ggctgtttct ggacaaatgg tcaaatatgt agtgaacgt ctagactgct 2280
 tgtgatgaa agtattgcag ctgagtttgt tgataagcct gtaaaatgga cgaaaaacat 2340
 taaaatttct gaccatttg aagaaggatg cggccttggc cctgttatta gtaaaggaca 2400
 gtacgacaaa attatgaagt tcatatcaac agcaaagagt gagggggcaa ctattttgta 2460
 tggaggttcc cgtcctgagc atttgaagaa aggttattac attgaacca ccattgtaac 2520
 tgatatctcc acatccatgc aaatatggaa agaggaaagtt tttggccctg tcttgtgtgt 2580
 taaaacattt agttccgaag atgaagccat tgcattggca aatgatacag agtacggttt 2640

agctgctgct gtgttttcta atgatcttga aagatgtgag aggataacga aggcctctaga 2700
 agttggagct gtttggttga attgctcaca accatgcttt gtccaagctc cttggggagg 2760
 catcaacgct agtggttttg gacgtgaact tggagaatgg 2800

<210> 2
 <211> 3119
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> gfp/BADH expression cassette

<400> 2
 cgggcccccc ctcgaggctg acggtatcga tgagcctgat tatccctaag cccaatgtga 60
 gtttttctag ttggatttgc tccccgccg tcgttcaatg agaatggata agaggctcgt 120
 gggattgacg tgagggggca gggatggcta tatttctggg agcgaactcc gggcgaatat 180
 gaagcgcgat gatcaagtt atgccttga atgaaagaca attccgaatc cgctttgtct 240
 accgggagac cacaacggtt tcctctaga aataattttg ttaacttta agaaggagat 300
 ataccatgt ccatgagtaa aggagaagaa ctttctactg gagttgtccc aattcttgtt 360
 gaattgatg gtgatgttaa tgggcacaaa ttttctgtca gtggagaggg tgaagtgat 420
 gcaacatcag gaaacttac ccttaaatat atttgacta ctggaaaact acctgttcca 480
 tggccaacac ttgtcactac tttctcttat ggtgttcaat gcttttcaag ataccagat 540
 catatgaagc ggcacgactt cttcaagagc gccatgcctg agggatacgt gcaggagagg 600
 accatctctt tcaaggacga cggaactac aagacacgtg ctgaagtcaa gtttgaggga 660
 gacaccctcg tcaacaggat cgagcttaag ggaatcgatt tcaaggagga cggaacatc 720
 ctcggccaca agttggaata caactacaac tcccacaacg tatacatcac ggcagacaaa 780
 caaagaatg gaatcaaagc taactcaaa attagacaca acattgaaga tggaagcgtt 840
 caactagcag accattatca acaaaatact ccaattggcg atggccctgt ccttttacca 900
 gacaacatt acctgtccac acaatctgcc ctttcgaaag atcccaacga aaagagagac 960
 cacatggtcc tctctgagtt tgtaacagct gctgggatta cacatggcat ggaatgaacta 1020
 tacaataat ctgaaagcc gaattctgca gatcgaacac ggaattcaat ggaagcaatg 1080
 ataaaaaat acaaatagaa aaggaaaggg aggaaatata aaaaaataga agagaaaagt 1140
 catacaaat tatatacaaa tgactacccc cctttttgta tttccttaat ttatttcctt 1200

aattgaattt cgatggatac aagttatgcc ttggaatgaa tttcggttga ttaggactag 1260
cgataagcctt gataatcgat tcggcttgat atcgctcgacg tagagaagtc cgtatttttc 1320
caatcaactt cattaataat ttgaatagat ctacatacac cttggttgac acgagtatat 1380
aagtcattgt atactgttga ataaaaagcc ttccattttc tattttgatt tgtagaaaac 1440
tagtgtgctt gggagtcctt gatgattaaa taaaccaaga ttttccatgg cgttcccaat 1500
tcctgctcgt cagctattca tcgacggaga gtggagagaa ccattaaaa aaaatcgata 1560
cccgcatca atccgtccac tgaagaaatc atcggtgata ttccggcagc cacggctgaa 1620
gatgtggagg ttgcggtggt ggcagctcga agagccttta ggaggaacaa ttggtcagca 1680
acatctgggg ctcatcgtgc cacatacttg cgtgctattg ctgctaagat aacagaaaaa 1740
aaagatcatt tcgttaaaact ggaaccattt gattctggga aaccttttga tgaagcagtg 1800
ctggcatttg atgacgttgc ttcatgtttt gaatattttg ccggacaagc agaagctctt 1860
gatggtaaac aaaaggctcc agtcaccctg cctatggaaa ggttcaaaag tcatgttctc 1920
aggcagcccc ttggtgttgt tggattaata tccccatgga attaccactt tctaattggct 1980
acatgaaaaa ttgctccagc acttgctgct ggggtgacag ctgtacttaa gccatccgag 2040
ttggcatctg tgacttgtct agaattcgtt gaagtttgca acgaagtggg acttctctca 2100
ggcgtgttga atactctgac aggattaggt ccagatgctg gtgcaccatt agtatcacac 2160
cccgatgttg acaagattgc ctttactggg agtagtgcca ctggaagcaa ggttatggct 2220
tctgtgcccc aattggttaa gcctgttaca ttgaacttg ggggtaaaaa tctatttgta 2280
gtgtttgaag atgttgatat tgataaagtt gtggaatgga ctatttttgg ctgtttctgg 2340
acaaatggtc aaatatgtag tgcaacgtct agactgcttg tgcataaag tattgcagct 2400
gagtttttgg ataagcttgt aaaatggacg aaaaacatta aaatttttga cccatttgaa 2460
gaaggatgcc ggcttgcccc tgttattagt aaaggacagt acgacaaaaa tatgaagttc 2520
atatcaacag caaagagtga gggggcaact attttgtatg gaggttcccc tctctgagcat 2580
ttgaagaaa gttattacat tgaaccacac attgtaactg atactcccac atccatgcaa 2640
atatggaaa aggaagtttt tggccctgtc ttgtgttata aaacatttag ttccgaagat 2700
gaagccattg cattggcaaa tgatacagag tacggtttag ctgctgctgt gttttcta 2760
gatcttgaaa gatgtgagag gataacgaag gctctagaag ttggagctgt ttgggtta 2820
tgctcacacac catgctttgt tcaagctcct tggggaggca tcaagcgtag tggtttttga 2880
cgtgaacttg gagaatgggg tatccagaat tacttgaata tcaagcaggt gactcaagat 2940

atttctgatg aaccatgggg atggtacaag tctccttgaa agccgaattc cagcacatg 3000
 gcggccgtta ctatgggatc cactagtaac ggcgccagtg gtgctggaat tcggctttct 3060
 agagcgatcc tggcctagtc tataggaggt ttgaaaaga aaggagcaat aatcatttt 3119

<210> 3
 <211> 2569
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> aphA-6/nptII expression cassette

<400> 3
 cgggcccccc ctcgaggtcg acggtatcga tgagcctgat tatccctaag cccaatgtga 60
 gtttttctag ttggatttgc tcccccgccg tcgttcaatg agaatggata agaggctcgt 120
 gggattgacg tgagggggca gggatggcta tatttctggg agcgaactcc gggcgaatat 180
 gaagcgcatg gatacaagtt atgccttgga atgaaagaca attccgaatc cgctttgtct 240
 acctgcagcc cgggagacca caacgggttc cctctagaaa taattttgtt taactttaag 300
 aaggagatat accatggaat taccaaatat tattcaacaa tttatcggaa acagcgtttt 360
 agagccaaat aaaattggtc agtcgccatc ggatgtttat tcttttaatc gaaataatga 420
 aacttttttt cttaagcgat ctagcacttt atatacagag accacatata gtgtctctcg 480
 tgaagcgaaa atgttgagtt ggctctctga gaaattaaag gtgcctgaac tcatcatgac 540
 ttttcaggat gagcagtttg aattcatgat cactaaagcg atcaatgcaa aaccaatttc 600
 agcgcttttt ttaacagacc aagaattgct tgctatctat aaggaggcac tcaatctgtt 660
 aaattcaatt gctattattg attgtccatt tatttcaaac attgatcatc ggttaaaaga 720
 gtcaaaattt tttattgata accaactcct tgacgatata gatcaagatg attttgacac 780
 tgaattatgg ggagaccata aaacttacct aagtctatgg aatgagttaa ccgagactcg 840
 tgttgaagaa agattggttt tttctcatg cgatatacag gatagtaata tttttataga 900
 taaattcaat gaaatttatt ttttagatct tggtcgtgct gggttagcag atgaatttgt 960
 agatatatcc ttgttgaac gttgcctaag agaggatgca tcggaggaaa ctgcgaaaat 1020
 atttttaagc catttaaaaa atgatatgacc tgacaaaagg aattattttt taaaacttga 1080
 tgaattgaat tgattccaag cattatctaa aatactccta gagcgcccg aacacggaat 1140
 tcaatggag caatgataaa aaaatacaaa tagaaaagga aaggaggagaa atacaaaaaa 1200

atagaagaga aaagtcatac aaagttatat acaaatgact accccccttt ttgtatttcc 1260
 ttaatttatt tccttaattg aatttcgatg gatacaagtt atgccttgga atgaatttcg 1320
 gttgattagg actagatcgt cgacgtagag aagtcggtat tttccaatc aacttcatta 1380
 aaaatttgaa tagatctaca tacaccttgg ttgacacgag tatataagtc atgttatact 1440
 gttgaataaa aagccttcca ttttctattt tgatttgtag aaaactagtg tgcttgggag 1500
 tcctcatgta ttaataaac caagattttc atatgattga acaagatgga ttgcacgcag 1560
 gttctcggcg cgcttgggtg gagaggctat tcggctatga ctgggcacaa cagacaatcg 1620
 gctgctctga tgcgcgctg ttccggctgt cagcgacggg gcgcccggtt ctttttgta 1680
 agaccgacct gtccggtgcc ctgaatgaac tgcaggacga ggcagcgcg ctatcggtgc 1740
 tggccacgac gggcgcttct tgcgcagctg tgctcgacgt tgctactgaa gcgggaaggg 1800
 actggtgctt attgggcgaa gtgcgggggc aggatctctt gtcatctcac cttgctctcg 1860
 ccgagaaagt atccatcatg gctgatgcaa tgcggcggtt gcatacgctt gatccggcta 1920
 cctgccatt cgaccaccaa gcgaacatc gcacgcagcg agcacgtact cggatggaag 1980
 ccggtcttgt cgatcaggat gatctggacg aagagcatca ggggctcgcg ccagccgaac 2040
 tgttcgccag gctcaaggcg cgcacgcccg acggcgatga tctcgtcgtg acccatggcg 2100
 atgctgctt gccgaatata atggtggaaa atggccgctt ttctggatc atcgactgtg 2160
 gccggtcggg tgtggcggac cgctatcagg acatagcgtt ggctaccgt gatattgtg 2220
 aagagcttg cggcgaatgg gctgaccgct tctcgtgct ttacgggtac gccgctccc 2280
 attcgcagcg catcgcttc tatcgcttc ttgacgagtt cttctgatct agagcgatcc 2340
 tggcctatgc tataggaggt ttgaaaaga aaggagcaat aatcattttc ttgtctatc 2400
 aagagggtgc tattgctctt ttctttttt ctttttattt atttactagt attttactta 2460
 catagacttt ttgtttaca ttatagaaaa agaaggagag gttattttct tgcattttt 2520
 catgattgag tattctattt tgattttgta ttgtttggg ctgcgagct 2560